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From the:
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

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PCT

WRITTEN OPINION

(PCT Rule 66)

Ref. 22/02/1999

Date of mailing (day/month/year)	09.12.1999
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Applicant's or agent's file reference 12008.16WO01	REPLY DUE within 3 month(s) from the above date of mailing
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International application No. PCT/US99/03781	International filing date (day/month/year) 22/02/1999	Priority date (day/month/year) 04/03/1998
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International Patent Classification (IPC) or both national classification and IPC
G01N27/327

Applicant
E. HELLER & COMPANY


1. This written opinion is the **first** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☒ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☒ Lack of unity of invention
 - V ☐ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain document cited
 - VII ☐ Certain defects in the international application
 - VIII ☒ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
 For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
 For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: **04/07/2000**.

Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer / Examiner Komenda, P Formalities officer (incl. extension of time limits) Conner, M Telephone No. +49 89 2399 8123
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I. Basis of the opinion

1. This opinion has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, pages:

1-54 as originally filed

Claims, No.:

1-101 as originally filed

102-118 with telefax of 04/10/1999

Drawings, sheets:

1/12-12/12 as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

3. This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

see separate sheet

4. Additional observations, if necessary:

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been and will not be examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 1-118,

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does

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not require an international preliminary examination (*specify*):

- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-118 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.
- ☐ no international search report has been established for the said claims Nos. .

IV. Lack of unity of invention

1. In response to the invitation (Form PCT/IPEA/405) to restrict or pay additional fees, the applicant has:

- ☐ restricted the claims.
- ☐ paid additional fees.
- ☐ paid additional fees under protest.
- ☐ neither restricted nor paid additional fees.

2. ☒ This Authority found that the requirement of unity of invention is not complied with for the following reasons and chose, according to Rule 68.1, not to invite the applicant to restrict or pay additional fees:

see separate sheet

3. Consequently, the following parts of the international application were the subject of international preliminary examination in establishing this opinion:

- ☒ all parts.
- ☐ the parts relating to claims Nos. .

VIII. Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Section I 3.:

- 1) In the absence of any detailed indication of the applicant it is at present not apparent from which parts of the original application documents the subject-matter of added claims 102 to 118 is derived.

The general statement in the fax submitted 04.10.1999, that new claims 102 to 118 are supported by "for example, pages 41-63 of the specification" does not provide the possibility of locating the specific combination of features which appears in said new claims. It should be mentioned here, that pages 41-63 partly relate to description pages and partly to claims pages.

- 2) The Applicant is well aware of the fact that the individual original claims or features disclosed in the description may not be combined at will. Only the **specific combinations of features** as originally disclosed are considered to be allowable under Article 19(2) PCT (see also Article 34(2)b) PCT).

The applicant is therefore requested, in his own interest, to provide such information in order to avoid time consuming inquiries which make it impossible to effectively use the **limited time** available for establishing the preliminary examination report.

- 3) Since the applicant is clearly well-acquainted with his invention and the text of the original claims and description the location(s) of those places which would support each of the specific amendments should present him with little difficulty.

Beginning with the originally filed claims (and/or description) on which the new claims are based and indicating in blocks which are easily identifiable, preferably even word for word, the text of the original application which justifies any addition or deletion to said original claims would be the most acceptable and efficient approach.

Section III:

- 1) The way of defining the invention in terms of multiple independent "manufacturing" claims 1-3, 86, 88, 96, 97 and 102 makes it impossible, to determine the matter for which protection is sought, and places an undue burden on others seeking to establish the extent of the protection.

In order to overcome this objection, it would appear appropriate to file an amended set of claims defining the relevant subject-matter in terms of a minimum number of independent process claims followed by dependent claims covering features which are merely optional (Rule 6.4 PCT).

Section IV:

- 1) Reference is made to the following documents:

D1 = DE-A-37 40 149

D2 = GB-A-2 287 472

These documents were not cited in the international search report. Copies of the documents are appended hereto.

- 2a) Document D1 represents the nearest available prior art with respect to independent claim 2 and reveals a method of manufacturing comprising the steps of providing a substrate and disposing a conductive material (carbon ink) on the surface of the substrate by non-impact printing (see abstract, final sentence). The method of D1 thus falls within the scope of present claim 2 and thus anticipates said claim (see in this respect also the method disclosed in D2, abstract).

Consequently, those claims which - independently from each other - refer back to said claim 2, define subject-matter which represents solutions for individual technical problems and thus defines a set of individual inventions.

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- b) Independent claims 1 and 86 define a manufacturing process which represents an alternative way to that of D1. No particular technical effect can be recognised with said alternative method.
 - c) Independent claim 3 defines another alternative to the method of D1. Again, no particular technical effect can be recognised with the method of claim 3.
 - d) Independent claim 88 differs from the method of D1 in that the conductive material is transferred onto the substrate in a particular pattern. No specific deposition technique is mentioned. The technical effect of said pattern appears to be the saving of conductive material.
 - e) Independent claim 96 defines a manufacturing method, leading to a device of a particular size. Here again, no specific deposition method is mentioned. The technical effect of said method appears to be a reduction in size of the device obtained.
- 3) From the above it is apparent that the technical features, representing the contribution over the prior art, are different for various independent claims. Consequently, said claims are not so linked as to form a single inventive concept as required by Rule 13.2. PCT.

Section VIII:

- 1) The following expressions are unclear, since they appear not to have a well recognised meaning in the particular art:
- "product sensor" (see e.g. claims 1-3 and 97);
 - "trace(s)" (see e.g. claims 65-68 or 88).

It should be noted in this respect, that claim 98 which defines a "deposition rate" also mentions "traces", for which no antecedent basis is to be found in claims 1-3.